

What is Claimed is:

1. A band elimination filter, comprising:
a plurality of acoustic resonators each having one end grounded; and
a transmission line to which the other end of each of said plurality of acoustic resonators is connected,
wherein at least some of said other ends are coupled to the transmission line at predetermined intervals, and
at least one reactance element is provided on said transmission line in all or a part of said predetermined intervals.
2. The band elimination filter according to claim 1, wherein said acoustic resonator is a surface acoustic wave resonator formed on a principal surface of a piezoelectric substrate.
3. The band elimination filter according to claim 2, wherein a normalized impedance, which is obtained by normalizing the impedance of said reactance element with a characteristic impedance, is higher than 1.
4. The band elimination filter according to claim 3, wherein said normalized impedance is lower than 1.5.
5. The band elimination filter according to any of claims 1 to 3, wherein said reactance element is an inductor.
6. The band elimination filter according to claim 5, wherein said inductor includes a wire used in wire mounting.

7. The band elimination filter according to claim 1 or 2, wherein said reactance element is a capacitor.

8. The band elimination filter according to claim 1 or 2, wherein said reactance element includes a capacitor and an inductor.

9. The band elimination filter according to claim 8, wherein said reactance element includes a parallel circuit of a capacitor and an inductor.

10. The band elimination filter according to claim 8, wherein said reactance element includes a serial circuit of a capacitor and an inductor.

11. The band elimination filter according to claim 1, wherein said reactance element is a chip component.

12. The band elimination filter according to claim 1, wherein said reactance element is formed on a piezoelectric substrate.

13. The band elimination filter according to claim 1, wherein said reactance element is formed in a mounting substrate on which said band elimination filter is mounted.

14. The band elimination filter according to claim 13, wherein said mounting substrate is a laminated body having a dielectric layer.

15. The band elimination filter according to claim 13, wherein said acoustic resonators are face-down mounted on said mounting substrate.

16. The band elimination filter according to claim 2, wherein electrode pads of said surface acoustic wave resonators which are grounded are separated from each other on said piezoelectric substrate.

17. The band elimination filter according to claim 1, wherein said acoustic resonator is a piezoelectric resonator.

18. The band elimination filter according to claim 17, wherein said piezoelectric resonator is a bulk wave resonator having an upper electrode, a lower electrode and a piezoelectric layer sandwiched between said upper electrode and said lower electrode.

19. The band elimination filter according to claim 18, wherein said piezoelectric layer is composed of a piezoelectric thin film.

20. The band elimination filter according to claim 18, wherein said reactance element is formed using said electrodes of said bulk wave resonator.

21. The band elimination filter according to claim 1, wherein said surface acoustic wave resonators have different resonance frequencies.

22. The band elimination filter according to claim 1, wherein said one end of each of said acoustic resonators is independently grounded wiring on a substrate.

23. The band elimination filter according to claim 1, wherein said reactance element is an acoustic resonator having a

resonance frequency different from the resonance frequencies of said acoustic resonators by a predetermined amount.

24. A filter device comprising a band elimination filter according to claim 1.

25. An antenna duplexer, comprising:

a transmission filter; and

a receiving filter;

wherein a band elimination filter according to claim 24 is used as said transmission filter or said receiving filter.

26. A communication apparatus, comprising:

transmission means of transmitting a signal;

receiving means of receiving a signal, and

a band elimination filter according to claim 1 is used in said transmission means and/or said receiving means.